

## NEBC MEETING NEWS

**January 2003.** The evening began with an exceptional potluck dinner featuring a wide range of botanical edibles. Various members of the Apiaceae and Fabaceae appeared as appetizers and dips. *Spinacea oleracea* and *Lycopersicon esculentum* combined in an excellent lasagna and quiche. Most of the desserts featured *Theobroma cacao*, supported by Pam Weatherbee's outstanding apple-cranberry pie. Apples appeared again in the mulled cider. *Vitis vinifera*, *Humulus lupulus*, and various strains of yeasts contributed to the array of beverages.

The annual member's "show-and-tell" evening got off to an early start, as images of ferns from Don Lubin's website played during the announcements. Don showed slides of the fall NEBC trip to Owls Head in Vermont and Mt. Willard in Crawford Notch, featuring intrepid club members and some pteridological highlights (fertile *Pteridium aquilinum*, *Isoetes echinospora*, *Lycopodium lagopus*). Paul Somers followed with more slides of Club trips, including the Montague Plains in June, Yale Camp in August (Sue Williams teaching about mosses, Ernst Schori as chef, drenched botanists), Owls Head, and the spectacular view from Mt. Willard. Art Gilman continued the fern theme with photos of an unusual dissected *Osmunda cinnamomea*, a new tetraploid subspecies of *Phegopteris connectilis*, and *Botrychium pallidum* on Petit Manan. Art also shared pictures of a population of showy lady slippers in Vermont, with spectacular patches of albino flowers.

Marsha Salett provided a preview of her CD field guide to peatlands and acidic fens of New England. The interactive format allows students and amateurs to easily find photos of common bog species at various life stages, with information on natural history, ecology, and phenology, as well as information on peatland ecology. In the same theme, Jenn Forman shared her summer project, which documented the flora of the UMass field station on Nantucket with a "virtual nature trail" and photo gallery. Some highlights included *Vitis labrusca*, which should be known as the kudzu of Nantucket, and the invasive *Cytissus scoparius*.

Traveling farther afield, Lisa Standley showed images of her trip to Mongolia by way of Beijing. Slides featured Mongolian modes of transportation, the grassy steppes of central Mongolia, and the vast spaces and mountain ranges of the Gobi. Plants were weird and wonderful, from the tiny curlicue *Ephedra* to the tremendous diversity of *Astragalus*, *Oxytropis*, and *Iris*. Barre Hellquist also showed slides and told tales of the desert, although in the Davis Mountains of Texas rather than Central Asia. He showed images of his search for

*Potamogeton clystocarpus*, the extremely rare Aguha Canyon Pondweed. Barre assured us that the plant (which looks exactly like *P. pusillus*) really is a good species with a unique rhizomatous growth form, perhaps to anchor it against the turbulence of flash floods. Nancy Eyster-Smith closed the evening presentation with slides from Arizona, featuring the Biosphere site, various effects of fire in the southwest, and sunset behind the Saguaros.

—LISA STANDLEY, Recording Secretary *pro tempore*.

**February 2003.** The evening's scheduled speaker was unable to attend due to the snowstorm, prompting a change in the program. Kanchi Gandhi introduced Rebecca Pradhan, a visiting scholar at Harvard from the Royal Society for the Protection of Nature, Bhutan, who spoke on "Rhododendrons and Conservation in Bhutan." She showed spectacular pictures of the many plant communities of Bhutan, with emphasis on her main research taxon, the genus *Rhododendron*. Rebecca was trained as a mathematician, but also has a Diploma in Horticulture from the University of Edinburgh. She has spent the past 18 years in forest research in Bhutan, where she is a pioneer in establishing a national herbarium and in conservation education.

Ms. Pradhan introduced Bhutan as a small country with extreme ecosystem diversity, with an elevation range from 100 m to 7000 m. The country is 72.5% forested while cultivated lands cover only 8.1% of the surface. Fortunately, there is a well-established system of four National Parks, four Wildlife Sanctuaries, and one strict Nature Reserve to safeguard the outstanding flora of Bhutan. Perhaps as important, and very forward-looking, is that biological corridors linking these preserves have been established to assure connectivity of the communities over time. To date, the flora is known to include 5600 species, of which 80 are endemic. There are two endemic genera: *Chromopanax* (Araliaceae) and *Bhutantherea* (Orchidaceae).

Focusing first on the various major communities, Rebecca led us through a tour of the forests of Bhutan from subtropical to subalpine. Lowland forests feature large trees of *Terminalia*, *Morus*, and *Ficus*. There are many orchids, including showy species of *Dendrobium* and *Phaius*. Next in elevation are warm broadleaf forest and chirpine (*Pinus roxburghii*) forest. Chirpine forest, although quite dry, has many epiphytes, including *Dendrobium falconii* and *Ceropegia* sp. The *Cymbidium hookerianum*, common to this forest type, is a delicacy in Bhutanese cuisine. Moist evergreen forest features trees of the genera

*Persea*, *Magnolia*, *Acer*, and *Quercus*, and also large bamboos (*Borinda grossa*), used locally in making brooms and bamboo mats. Dry broadleaf forest is dominated by the oaks *Q. griffithii* and *Q. lanata*. Further up slope, conifer forests and alpine vegetation dominate, with many beautiful genera such as *Cypripedium*, *Meconopsis*, *Primula*, *Aconitum*, and *Senecio*.

Bhutan has 46 species of *Rhododendron*, of which four are endemic: *R. kesangiae* (named after the Queen Mother of Bhutan), *R. bhutanensis*, *R. pogonophyllum*, and *R. flinckii*. Only one, *R. arboreum*, occurs in lowland forests. There are 10 species in the warm broad-leaved forests, but 34 species occur in the cool broad-leaved forest, with maximum diversity at approximately 3500–4000 m. About 14 species occur in the alpine shrub community. There are at present few identified threats to rhododendrons in Bhutan. Although several have economic uses (for incense, for wood carving, even for insecticide) the level of exploitation is small. Rebecca has published a book, *Wild Rhododendrons of Bhutan*, and is helping to establish an *in situ* rhododendron garden at the Thrumshingla National Park.

—ART GILMAN, Recording Secretary *pro tempore*.

**March 2003.** Vice President Art Gilman introduced the evening's speaker, Kristen Porter-Utley, a Ph.D. candidate from the University of Florida at Gainesville. She began her talk, titled "The Apetalous Passionflowers: Phylogenetic Relationships within *Passiflora* Section *Cieca* (Passifloraceae)," by drawing a diagram to introduce Club members to the intricacies of *Passiflora* flower morphology.

As indicated by the title of her talk, Kristen studies passionflowers that have sepals but no petals. This is a group of 19 climbing species (4 of which are endangered) that are native to the southern U.S., Mexico, and Central and South America. Club members were introduced to the research subjects with many photos of *Passiflora* plants in flower, no less beautiful for their lack of petals. In her research, Kristen used both morphological and molecular data in order to better understand the taxonomy of *Passiflora* subgenus *Decaloba* supersection *Cieca* [note: change in rank reflects a new, unpublished classification presented at the meeting of the Botanical Congress in St. Louis in August, 2000]. She began by examining over 4000 specimens at 40 herbaria, as well as photos of species in the *P. suberosa* complex that have become naturalized in tropical regions of the Old World. After the preliminary analysis, she then scored 95 of the specimens for 330 different

vegetative and floral characteristics. For the molecular analysis, she scored samples for sequence variation in three different regions of ribosomal DNA: ITS-1, ITS-2 and 5.8S. Both the morphological and molecular data were then analyzed using software that generates cladograms to show how closely related the taxa are to one another.

Supersection *Cieca* contains two problematic species complexes, *Passiflora suberosa* and *P. coriacea*. Morphological analysis of herbarium specimens of *P. suberosa*, a species known to have both polyploidy and hybridization, indicates that it has served as a “taxonomic garbage can” for at least four entities (*P. pallida*, *P. suberosa* subsp. *suberosa*, *P. suberosa* subsp. *littoralis*, and *P. tridactylites*) that cannot be assigned to any of the other members of the supersection. The molecular analyses also support this finding. *Passiflora coriacea* is another “species” that exhibits marked morphological variation over its distribution from eastern Mexico to northern South America. Evidence indicates that it contains three distinct entities: *P. coriacea*, *P. megacoriacea*, and *P. sexocellata*.

Kristen also noted that when the cladograms of morphological and genetic data were placed side by side they were completely different. Thus, the complex relationships that exist within the supersection are not yet completely understood. She concluded by saying that this work had led to revisions in the taxonomy of the genus, since the analyses showed that while members of supersection *Cieca* share a common ancestor, the *Passiflora suberosa* and *P. coriacea* subcomplexes within it are not monophyletic. Following her talk, Kristen entertained several questions from club members about the apetalous *Passiflora* species, including a query about their pollinators, which are mainly wasps and bees, and whether their fruits are edible (they are, but they tend to be small and bitter).

—JENNIFER FORMAN, Recording Secretary *pro tempore*.